Congressional Hearing Testimony
The Subcommittee on Water Resources and Environment
November 30, 2011

Good morning Chairman Gibbs and Rep Bishop, distinguished committee members, my name is Brad Lawrence. I am a mechanical engineer working as the Director of Public Works for the City of Fort Pierre, SD. I have thirteen years of experience in that position. Fort Pierre is situated just five miles downstream of the Oahe Project, the third dam in the six dam system. Thank you for inviting me to testify about the Missouri River Flood of 2011.

I intend to discuss two major topics: 1) The US Army Corps of Engineers (Corps) response and 2) the impact to the smaller communities along the Missouri River.

There are two major sources of water to the reservoirs; runoff from snow melt and rainfall. I have two slides that I will incorporate into my testimony today. The first one is the Snow Water Equivalent (SWE) slide (Figure 1) for the Upper Missouri River basin. This slide is the basis for my testimony and covers March 1 to June 30.

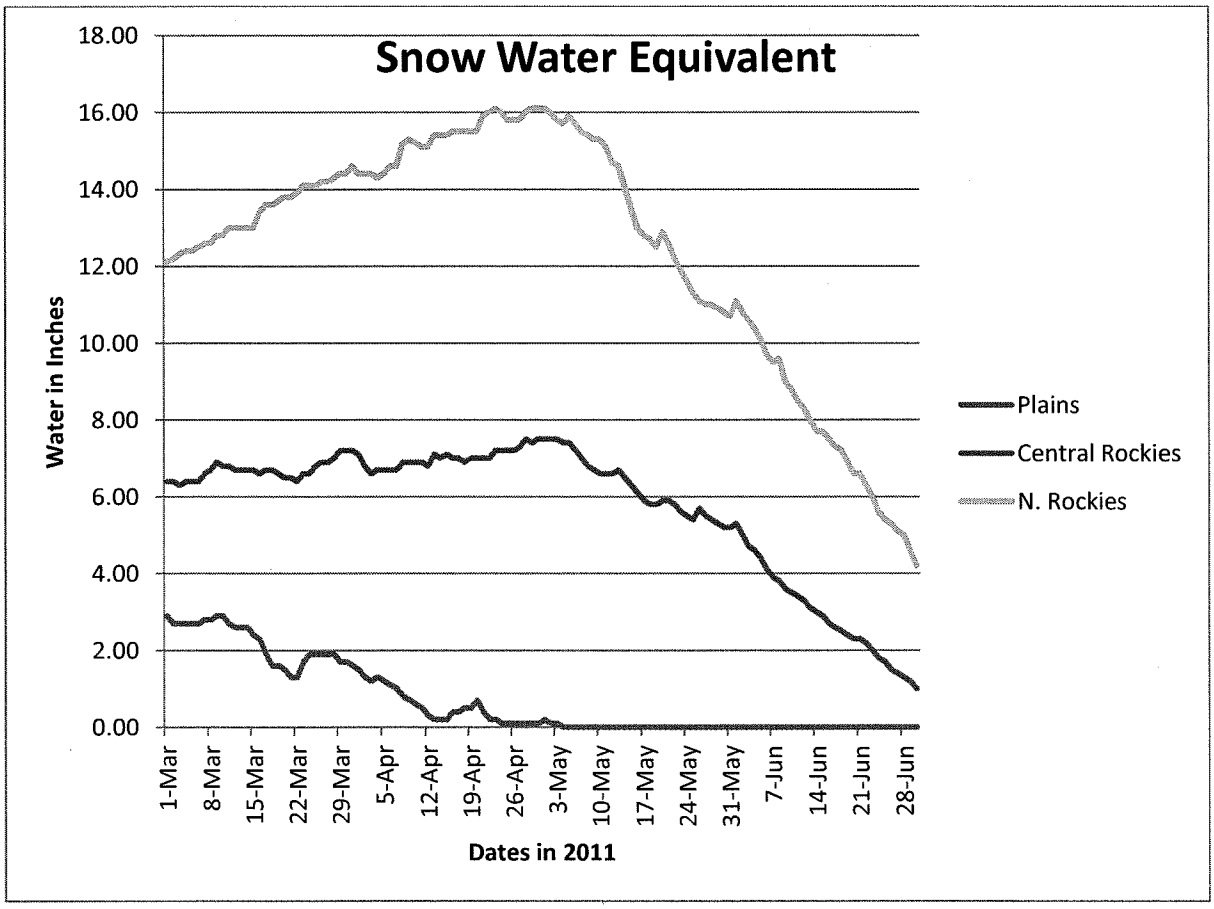

Figure 1

The top line in green is the SWE for the Northern Rockies, the second line in red is the SWE for the Central Rockies and the bottom line in blue is the SWE for the Plains snowpacks. The rising lines are increased amounts of water in snow that hasn't melted that will eventually runoff into the basin. The decreasing lines are the melting and running off of the stored water in the snowpacks. This information comes from the National Weather Service.

In early 2011 it was apparent that the plains snowpack was going to contribute a significant amount of runoff. I wrote a widely disseminated e-mail indicating that the risk for flooding was increased by the plains snowpack. While it looks comparatively small, the Plains Snowpack covers a vast amount of land area. Even at only 3" of SWE, the runoff from the plains filled more than 50% of the total available flood storage on the reservoir system by May 1.

The plains snowpack and its SWE (Figure 1) was a visible and quantifiable risk. The accumulation peaked just prior to March 1 and then melted off by May 1.

On Fort Peck by May 1, approximately 33% of the storage available on March 1 was filled by the plains snowpack runoff. On Garrison the amount was closer to 58% of the storage available on March1 was consumed by the plains snowpack runoff. On Oahe nearly 80% of the storage available on March 1 was consumed by the plains snowpack runoff.

The next graph is for the Garrison Reservoir (Figure 2).

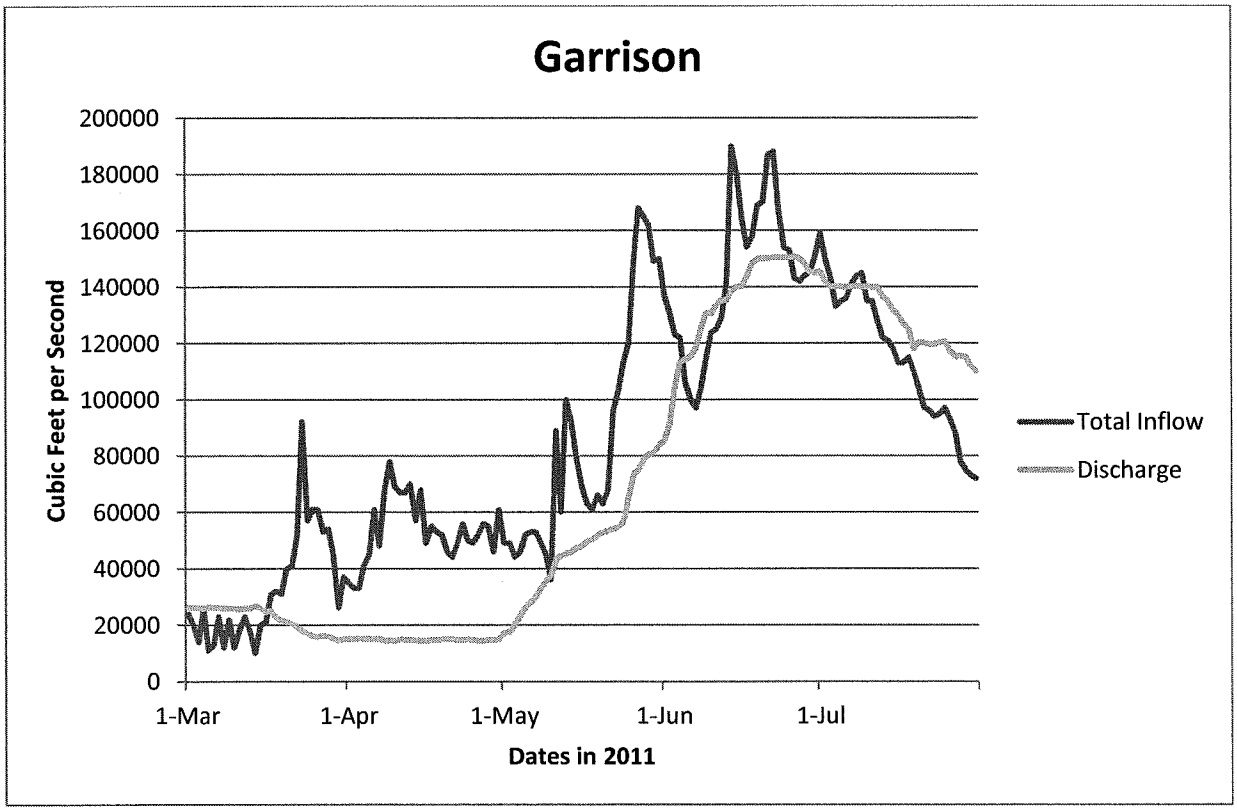

Figure 2

The key item to take away from this slide is that when the blue line is above the green line the reservoir is filling and when the green line is above the blue line the reservoir is draining.

The inflow curves show many aspects of the runoff into the reservoirs. The sharp spikes are from significant increases in the runoff over short periods of time; either from rapid snow melts or rain events or a combination of both.

Back on the SWE chart (Figure 1) you can see that the mountain snowpacks climbed relatively steadily to their maximum values near the 20th of April and began melting around the 1st of May. Please note the sharp drop from May 1 to May 10. That sharp drop creates a significant amount of runoff and therefore flow into the reservoirs.

The sharp rises in the Garrison reservoir (Figure 2) inflow indicates significant events. You can clearly see the spikes in the inflow charts from rainfall and rapid snow melt. While these spikes are significant, they pale in comparison to the large hump that starts in early May and continues to the end of June. That large hump is the overall mountain snowpack runoff.

The notion that the "Perfect Storm" rains in Montana caused this major flood just doesn't hold water! You can see for yourself that while the volume of water from those events is significant, it just doesn't measure up to the volume contained in the plains or mountain snowpacks, both of which were visible and measurable prior to the "Perfect Storm!" It is also interesting to note that the Corps began increasing the flows from Garrison significantly ahead of any rain falling in Montana. In fact they were at near record releases prior to the rain falling.

While no one could have predicted the heavy rains in Montana in May, everyone could have predicted that the water stored in the snowpacks was going to run off. The failure to determine the risk involved in the water stored in the plains and mountain snowpacks led to a lack of decisive action.

The reality is with this much water stored in the snow it was inevitable that we would flood. The lack of preemptive action led to much higher stages on the river and consequently much more damage. Nearly 50 % of the residents of Fort Pierre were evacuated from their homes, many for as many as 100 days. There are still nearly 100 homes that are unoccupied. Our little community is financially devastated after this event. Others downstream are in a similar or worse situation. The duration of the event is unprecedented and is the root cause of the financial hardship.

The most troubling issue for many South Dakotans was the lack of clear communication from the Corps. An early warning of any kind was never issued. Even during the initial stages of the event the communication of anticipated water levels kept changing daily. That made preparation nearly impossible. Greg Powell the City Engineer from the City Chamberlain says he is still waiting for a call to warn him that his local reservoir was going up 4' over a June weekend.

In closing I want to use the words from Jeff Dooley community manager for the Dakota Dunes. He writes:

The summer of 2011 will be ingrained in the memory of everyone who lives, works or farms along the Missouri River. This event has changed people's lives forever. My personal property

was not damaged by the flood. But, as the Manager of the community, I had to witness the distress caused by this event as my friends and neighbors were asked to leave their homes behind. This cannot happen again. We need to find out if and why these extreme releases were necessary and recognize or admit what could or should have been done to prevent it. Again, in a controlled river system there has to be an expected margin of error, but this year's releases far exceeded any reasonable expectation of those margins.

I concur with Jeff's findings.

Thank you Mr. Chairman for inviting me to speak at this hearing.